EPA Region 7 TMDL Review

TMDL ID:	KS-LA-12-246-10	**Waterbody ID:**	KS-LA-12-246_10, KS-LA-12-246_19, KS-LA-12-246_20, KS-LA-12-246_21, KS-LA-12-246_22, KS-LA-12-246_23
Waterbody Name:	UPPER LITTLE ARKANSAS RIVER -- CHLORIDE		
Tributary:	SEE (ENCLOSURE A) FOR TRIBUTARIES COVERED UNDER THIS TMDL		
Pollutant:	CHLORIDE		
State:	KS	**HUC:**	11030012
BASIN:			
Submittal Date:	6/30/2006		
Approved:	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter, dated June 30, 2006, and received by EPA on June 30, 2006, formally submitted this TMDL for approval under Section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The chloride averages for the sampling station are illustrated in Table 1, which indicates more than half of the samples exceeded the established water quality standards. Station 246 is a fixed KDHE sampling station that has been sampled since 1985 and is currently sampled every other month. Chloride exceedances over 250mg/L cease once flows reach the 15% exceedance levels at station 246.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The Kansas chloride criteria for domestic Water Supply is 250 mg/L at any point of domestic water supply diversion (K.A.R.28-16-28e(c)(3)(A)). For aquatic life support [acute criterion] is 860 mg/l for (KAR 28-16-28e(c)(2)(D)(ii)).

Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The current standard of 250 mg/L of chloride was used to establish the TMDL and its Wasteload Allocations.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

The primary source of natural chloride is derived from groundwater discharge to the streams from the Lower Cretaceous, Permian Bedrock and from the Equus Beds deposits of the High Plains aquifer. Natural chloride in the Turkey Creek watershed enters the streams from perched groundwater flowing through soils and shallow sediments above less permeable sediments. There are seven permitted NPDES facilities located upstream of station 246.
The facilities consist of: one "non-overflowing" commercial facility, one industrial permitted facility, and five municipal facilities. Of these, the City of McPherson is the only significant discharger in the Turkey Creek watershed. Although the irrigation return flow could have the potential to affect the background chloride concentrations, return flow is not expected to contribute any significant amount of chloride to the Little Arkansas River at station 246. The impact of animal wastes to the Little Arkansas River at station 246 is minimal. The majority of the oil-brine pollution entering the Little Arkansas River above station 246 originates from the Ritz-Canton and Voshell fields in the Turkey Creek watershed and from the Welch-Bornholdt and Geneseo-Edwards fields along the Little Arkansas River. The NCRA facility from the Turkey Creek watershed is no longer discharging; therefore, the current load from Turkey Creek is primarily associated with brine pollution and the City of McPherson.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The majority of the current impairment is associated with chloride loads originating from the Turkey Creek watershed and historic oil- field brine pollution above Buhler along the Little Arkansas River. The milestone for this TMDL has been set for the year 2025. By this time the chloride concentration attributed to brine should be reduced by approximately 21%. The success of this TMDL is relative to the success of a previously developed TMDL for the Turkey Creek.

WLA Comment

WLA have been established for individual NPDES facilities and are displayed in Table 9 of the TMDL document. The total is 8,590 lbs per day.

LA Comment

Various scenarios are displayed for optional LA conditions depending on assumptions of flow and the success of the Turkey Creek TMDL.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The Margin of Safety is implicitly established by conservatively assuming the entire chloride load reaches sampling station 246 under low flow conditions, when in fact the flow from several of the streams does not based on available USGS flow data.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

Seasonal variation has been incorporated in this TMDL through the documentation of the seasonal consistency of elevated chloride levels.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings to discuss TMDLs in the Lower Arkansas Basin were held on June 7, 2006 in Hutchinson. An active Internet Web site was established at http://www.kdhe.state.ks.us/tmdl/ to convey information to the public on the general establishment of TMDLs and specific TMDLs for the Lower Arkansas Basin. Public Hearings on the TMDLs of the Lower Arkansas Basin was held on June 7, 2006 in Hutchinson. The Lower Arkansas Advisory Committee met to discuss the TMDLs in the basin on June 7, 2006.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

KDHE will continue to collect samples from the station 246 along the Little Arkansas River. Based on that sampling, the priority status will be evaluated in 2011 and thereafter, including application of numeric criterion based on background concentrations. At a minimum, quarterly monitoring of chloride levels in the effluent discharge will be a condition of the NPDES and state permits for facilities above station 246 that actually discharge to the watershed.

Reasonable assurance

Reasonable assurance only applies when reductions in nonpoint source loading is required to meet the prescribed waste load allocations.

Even zeroing out the WLA would not lead to compliance with the existing water quality standards because of the brine fields and natural background concentrations of chloride. This is a phased following an adaptive management approach. The TMDL has established aggressive WLAs for the permitted facilities and recognizes the need for optional solutions to the problem because of the unknown changes from the brine field discharges.